Other compounds isolated are *munetone* $C_{21}H_{18}O_4$ m.p. 195–197° (IR, NMR and MS), Sericetin $C_{20}H_{17}O_4$ m.p. 144° (IR, NMR and MS); acetate $C_{22}H_{19}O_5$ m.p. 172–173° and a *phytosterol* m.p. 144–150° $[\alpha]_D$ − 60°; acetate m.p. 134°.

*Plant. Duabanga Sonneratiodes* Ham. (Lythraceae). *Occurrence.* Eastern Himalaya, Assam and Andaman Islands. *Previous work.* Stem bark.[3]

*Stem bark.* During the course of screening programme of biologically active plants at C.D.R.I., Lucknow this plant showed a good order of anti-cancer activity against Walker Carcinosarcoma 256 in rats.[11] This activity was found to be located in benzene fraction of EtOH extractive which (chromatographed over silica gel) gave *hentriacontanone* (m.p., m.m.p., TLC and oxime), *lignoceryl ferulate*[12] $C_{34}H_{58}O_4$ m.p. 80–81° (IR, NMR and m.m.p.). On alkaline hydrolysis it furnished lignoceryl alcohol $C_{24}H_{50}O$ m.p. 76° (m.m.p., IR, NMR and acetate) and ferulic acid $C_{10}H_{10}O_4$ m.p. 170° (m.m.p., IR and NMR), *acacetin*[13] $C_{16}H_{12}O_5$ m.p. 258° $\lambda_{max}$ 270 and 328 nm; acetate $C_{20}H_{16}O_7$ m.p. 204° (MS and NMR). *Betulinic acid* $C_{30}H_{48}O_3$ m.p. 316°; acetate $C_{32}H_{50}O_4$ m.p. 296°; methylester $C_{31}H_{50}O_3$ m.p. 200° (m.m.p., $[\alpha]_D$, MS and NMR) and *sitosterol-β-D-glucoside* (m.p., m.m.p., $[\alpha]_D$, acetate and NMR). Acid hydrolysis afforded sitosterol (m.p., m.m.p., $[\alpha]_D$ and acetate) and glucose (PC).

*Plant. Paspalum scrobiculatum* L. (Gramineae), *Occurrence.* Hotter parts of India, wild or cultivated.

*Seeds.* Light petroleum extract (chromatographed over alumina) gave *hentriacontanol, hentriacontanone, sitosterol* and *campesterol* $C_{28}H_{48}O$ m.p. 156–157° $[\alpha]_D$ − 48°; benzoate $C_{35}H_{52}O_2$ m.p. 155° $[\alpha]_D$ − 26° (m.m.p., TLC and NMR).

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## CACTACEAE

# FATTY ACIDS OF *OPUNTIA ENGELMANNII*

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**Key Word Index**—*Opuntia engelmannii*: Cactaceae: fatty acids.

*Plant. Opuntia engelmanii. Uses.* Food,[1–3] medicinal.[4] *Previous work.* On sister species *O. ficus-indica*[5] and *O. fragilis*.[6]

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*Joints, unripe fruit and ripe fruit.* Separate lipid extractions were performed on each of the three types of tissue by suspending 30·0 g (wet) of plant tissue in 100 ml of $CHCl_3$–$CH_3OH$ (2:1). The mixture was blended and filtered, followed by partitioning with 0·1 M aqueous NaCl.[7,8] The lipids were dried (45°, $N_2$) and saponified with 0·5 M $CH_3OH$–KOH. Fatty acid methyl esters were prepared by the addition of $CH_3OH$–$BF_3$.[9] Purification of fatty acids was achieved by column chromatography (100–200 mesh Bio-Sil silicic acid in hexane). The fatty acids were then identified by GLC (Barber Colman Series 5000 Gas Chromatograph, 1·8 m × 4 mm columns, packed with 20% DEG succinate on 60/80 mesh Gas Chrom Q). Fatty acids present in *O. engelmanii* are shown in Table 1. Trace amounts of 12:0 and 14:0 and an unknown were also detected. The three tissues did not show significant differences in the concentration of 15:0. The joints and unripe fruit did indicate significant deviations in the concentrations of 16:0, 18:1 and 18:2. Significant variations in the concentrations of 17:0 and the unidentified fraction were detected between the joints and the ripe fruit. The concentration of 18:3 found in the unripe fruit varied significantly from that found in the joints and the ripe fruit. The total mean micromoles of fatty acids of each of the tissues did not vary significantly. The mean mol % fatty acids of *O. engelmanii* are presented in Table 1.

TABLE 1. MEAN mol % FATTY ACIDS OF *Opuntia engelmanii* TISSUES

| Symbol | Total | Joints | Unripe fruit | Ripe fruit |
|---|---|---|---|---|
| 15:0 | 3·12 | 3·59 | 3·32 | 2·46 |
| 16:0 | 18·73 | 21·99 | 15·84 | 18·37 |
| 17:0 | 5·55 | 7·22 | 5·25 | 4·18 |
| Unknown | 3·71 | 4·91 | 3·53 | 2·69 |
| 18:0 | 4·04 | 4·45 | 4·03 | 3·65 |
| 18:1 | 14·61 | 11·91 | 15·13 | 16·78 |
| 18:2 | 35·64 | 25·36 | 44·67 | 36·88 |
| 18:3 | 15·36 | 21·28 | 8·83 | 15·98 |

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